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(58) Field of search
C3N

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(54) Improvements in and Relating
to Board Products and Mouldings

(57) A composition for the
manufacture of building boards and
mouldings, especially boards and
mouldings for fire protection,
comprising potassium silicate and/or
sodium silicate, light weight

aggregate and cellulosic fibres.
Preferred light weight aggregates are
vermiculite and/or pulverised fuel ash
cenospheres. The cellulosic fibres may
be first dispersed in a solution of
potassium silicate and/or sodium
silicate before adding the resultant
liquid dispersion to the dry
ingredients.

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SPECIFICATION Improvements in and Relating to Board Products and Mouldings

This invention relates to a novel composition
5 for boards and mouldings of the type which in the
past have comprised light weight aggregate and
potassium silicate or sodium silicate binder.
Typical light weight aggregates include
vermiculite, perlite, and pulverised fuel ash
cenospheres and are usually inorganic.

The usual process for manufacturing this type
of board or moulding normally involves the use of
potassium or sodium silicate in solution with
water, and usually includes the steps of mixing,
15 pressing and stoving.

This type of board or moulding is used for a
variety of applications but is especially suitable for
fire resistant and high temperature insulation
applications. This type of board or moulding does
20 however have the disadvantage of being friable,
which results in excessive breakages in handling,
transportation and application, and also in the
product not being suitable for application
methods which involve mechanical means such
25 as drilling, screwing, the use of clips and brackets
and so on.

The usual methods of application for these
materials have in the past included the use of wet
cements or adhesives, and have become much
30 less attractive because of the messy nature of the
process, and many skilled applicators of these
materials now prefer to avoid the use of wet
cements or adhesives and to use instead
materials which can be fixed by mechanical
35 means.

According to the present invention a
composition is provided for the manufacture of
boards and mouldings, comprising potassium
silicate and/or sodium silicate, light weight
40 aggregate and cellulosic fibres, which will be
more suitable for application by mechanical
means. The ingredients are preferably present in
the following proportions by dry weight:

	%
45 Potassium silicate and/or sodium silicate	3—25
Light weight aggregate	55—95
Cellulosic fibres	$\frac{1}{2}$ —20

The particularly preferred proportions are in the
50 ranges 7—20%, 80—90%, and 2—8% by weight
respectively.

The preferred maximum amount of cellulosic
fibre when the application is to be a fire resistant
one is 5%.

55 The density of the resultant product made from
this composition will ordinarily have a density in
the range 300—900 kg/m³.

It is preferable in the mixing operation to first
disperse the cellulosic fibres in the potassium
60 and/or sodium silicate solution and then to add
this liquid dispersion to the dry ingredients in the
mixer.

An example of a preferred composition
according to this invention is as follows by dry
65 weight:

	%
Potassium silicate and/or sodium silicate	15
Vermiculite and/or pulverised 70 fuel ash cenospheres	81
Cellulosic fibres	4

The advantage of boards and mouldings made
in accordance with this invention lies in their
increased toughness and better suitability for
75 application or installation using mechanical
methods, such as drilling, screwing, use of clips,
brackets and so on, and also in much reduced
breakages in handling, transportation and
application.

80 Claims

1. A composition suitable for the manufacture
of building boards and mouldings comprising
potassium silicate and/or sodium silicate, light
weight aggregate and cellulosic fibres.

85 2. A composition as claimed in Claim 1 in
which the light weight aggregate is vermiculite
and/or pulverised fuel ash cenospheres.

3. A composition as claimed in Claim 1 in
which the ingredients are present in the following
90 percentages by dry weight:—

	%
Potassium silicate and/or sodium silicate	3 to 25
Light weight aggregate	55 to 95
95 Cellulosic fibres	$\frac{1}{2}$ to 20

4. A method of making building boards or
moulding from compositions as claimed in any
preceding claim, which includes the steps of
mixing the ingredients, pressing and stoving or air
100 drying.

5. A method of mixing the moulding
compositions as claimed in Claims 1 to 3 which
includes the step of first dispersing the cellulosic
fibres in a solution of potassium silicate and/or
105 sodium silicate and then adding this liquid
dispersion to the dry ingredients.

6. Building boards or mouldings made from
compositions as claimed in Claims 1 to 3.